

**AMENDMENTS TO THE CLAIMS**

1-37. (canceled)

38. (withdrawn): A process for the production of a  $\beta$ -lactam, comprising the steps of:

a) fermenting on a volume scale of at least  $10\text{ m}^3$ , a microbial strain that produces a  $\beta$ -lactam in a fermentation medium which contains only chemically defined components as carbon and nitrogen sources and contains no complex raw materials, and

b) recovering the  $\beta$ -lactam from the fermentation medium,

wherein the microbial strain is a mutated or recombinant  $\beta$ -lactam producing strain that is capable of being fermented on said volume scale and that has been selected for improved performance on the medium and/or increased  $\beta$ -lactam production in comparison to a parent strain.

39. (withdrawn): A process for the production of a  $\beta$ -lactam, comprising the steps of:

a) fermenting on a volume scale of at least  $10\text{ m}^3$ , a microbial strain that produces a  $\beta$ -lactam in a fermentation medium which contains chemically defined components and a complex carbon and/or nitrogen source which is less than 10% of the total carbon and/or nitrogen sources in the medium, and

b) recovering the  $\beta$ -lactam from the fermentation medium,

wherein the microbial strain is a mutated or recombinant  $\beta$ -lactam producing strain that is capable of being fermented on said volume scale and that has been selected for improved performance on the medium and/or increased  $\beta$ -lactam production in comparison to a parent strain.

40. (withdrawn): The process of claim 38, wherein the chemically defined components comprise a carbon source selected from the group consisting of glucose, lactose, fructose, sucrose, a maltodextrin, starch inulin, glycerol, a vegetable oil, a hydrocarbon, an alcohol, an organic acid, and/or a nitrogen source selected from the group consisting of urea, ammonia, nitrate, an ammonium salt and an amino acid.

41. (withdrawn): The process of claim 40, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

42. (withdrawn): The process of claim 38, wherein said fermenting is via a batch, a repeated batch, a fed-batch, a repeated fed-batch or a continuous fermentation process.

43. (withdrawn): The process of claim 42, wherein fermenting is via a fed-batch process.

44. (withdrawn): The process of claim 43, wherein a carbon and/or a nitrogen source is fed to the process.

45. (withdrawn): The process of claim 44, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

46. (withdrawn): The process of claim 38, wherein the microbial strain is a filamentous microbial strain.

47. (withdrawn): The process of claim 46, wherein the filamentous strain is a fungus.

48. (withdrawn): The process of claim 47, wherein the fungus is a *Penicillium* strain.

49. (withdrawn): The process of claim 48, wherein the fungus is *Penicillium chrysogenum*.

50. (withdrawn): The process of claim 48 wherein the  $\beta$ -lactam is penicillin V.

51. (withdrawn): The method of claim 48 wherein the  $\beta$ -lactam is adipoyl-7-ADCA.

52. (currently amended): A process for the production of a  $\beta$ -lactam, comprising the steps of:

- a) fermenting on a volume scale of at least  $10\text{ m}^3$ , a microbial strain that produces a  $\beta$ -lactam in a fermentation medium comprising ~~consisting essentially of~~ chemically defined constituents, wherein said fermentation medium contains an ~~[[the]]~~ amount of complex carbon and/or nitrogen source that is at most about 10 % of the total amount of carbon and/or nitrogen, and
- b) recovering the  $\beta$ -lactam from the fermentation medium,

wherein the chemically defined constituents comprise a carbon source selected from the group consisting of carbohydrate, ~~glucose, lactose, fructose, sucrose, a maltodextrin, starch inulin,~~ glycerol, a vegetable oil, and a hydrocarbon; and a nitrogen source selected from the group consisting of urea, ammonia, nitrate, an ammonium salt and an amino acid.

53. (previously presented): The process of claim 52, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

54. (previously presented): The process of claim 52, wherein said fermenting is via a batch, a repeated batch, a fed-batch, a repeated fed-batch or a continuous fermentation process.

55. (previously presented): The process of claim 54, wherein fermenting is via a fed-batch process.

56. (previously presented): The process of claim 52, wherein a carbon and/or a nitrogen source is fed to the process.

57. (previously presented): The process of claim 56, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

58. (previously presented): The process of claim 52, wherein the microbial strain is a filamentous microbial strain.

59. (previously presented): The process of claim 58, wherein the filamentous strain is a fungus.

60. (previously presented): The process of claim 59, wherein the fungus is a *Penicillium* strain.

61. (previously presented): The process of claim 60, wherein the fungus is *Penicillium chrysogenum*.

62. (previously presented): The process of claim 59 wherein the  $\beta$ -lactam is penicillin V.

63. (previously presented): The method of claim 59 wherein the  $\beta$ -lactam is adipoyl-7-ADCA.

64. (withdrawn): A process for the production of a  $\beta$ -lactam, comprising the steps of:

- a) fermenting on a volume scale of at least 10 m<sup>3</sup>, a microbial strain that produces a  $\beta$ -lactam in a fermentation medium which contains chemically defined components and a complex carbon and/or nitrogen source which is less than 10% of the total carbon and/or nitrogen sources in the medium, and
- b) recovering the  $\beta$ -lactam from the fermentation medium.

65. (new) The process of claim 52, wherein said carbohydrate is glucose, lactose, fructose, sucrose maltodextrin or starch inulin.

66. (new) The process of claim 52, wherein the amount of complex carbon and/or nitrogen source in said fermentation medium is at most about 5 % of the total amount of carbon and/or nitrogen.

67. (new) The process of claim 52, wherein the amount of complex carbon and/or nitrogen source in said fermentation medium is at most about 1 % of the total amount of carbon and/or nitrogen.

68. (new) The process of claim 52, wherein the fermentation medium contains no complex carbon and/or nitrogen source.